6.4L Ford Powerstroke Diesel Applications, 2008MY-2010MY F250-F550
Phalanx/Phalanx II Flash Console, On-Screen Tuning (OST) User Manual, Version 1.21

Spartan On-Screen Tuning Software for Phalanx and Phalanx II Flash Consoles allows for users to adjust Vehicle and Tune File parameters to their specific needs. This manual covers the usage of this software for all previous Phalanx Flash Consoles (DashDAQ), when upgraded software is installed, and for all current Phalanx II Flash Consoles (nDash), which is already pre-installed. **NOTE** This update is only available for single licensed tuners, with automatic transmissions, and the factory transmission control module. It will not work for those that have the Spartan transmission control module (tcm), manual transmission trucks, or those that have aftermarket transmissions. An update for Spartan tcm customers will be available at a later date.

On-Screen Tuning version 7.10 (current as of March 21, 2014) includes the following standard user-adjustable features:

Tire Size Adjustment
EGR System Selection (System On/System Off)
Low Pressure Fuel System Selection (Factory System/Aftermarket System)
Traction Control Selection (System Enabled/System Disabled)
Converter Lockup Speed (Early Lockup/Late Lockup)
P0088 DTC Selection (Enable/Disable)

These feature adjustments are available upon selecting any tune file to load into your vehicle while using the "Load Tune" function on your flash console (please note, only

Tire Size Adjustment and Traction Control Selection are available for non-Race files with DPF equipped).

Tire Size Adjustment

The tire size adjustment parameter can be used to adjust the factory computer settings to compensate for larger-than-stock or smaller-than-stock tires on your vehicle. This correction will adjust the vehicle's Speedometer, along with all other integrated systems on the vehicle. The correction is performed as a percentage calculation in reference to the difference between the NEW TIRE SIZE (size currently installed on the vehicle) and OLD TIRE SIZE (size previously installed on the vehicle). This correction can be calculated two ways:

Method 1- GPS (Most Accurate)

In order to perform a tire size speed correction via GPS, you will need to have the "NEW TIRE SIZE" tires equipped on the vehicle to begin. A GPS speed measuring device will also be required, such as a "Garmin"-style vehicle GPS unit that will display vehicle speed in miles per hour (MPH). A GPS-equipped smartphone can also be used for this, such as the iPhone or Android devices, by downloading any application that will display a movement speed in miles per hour.

In order to determine your correction factor, we recommend setting the vehicle cruise control at 70MPH (by reading of the FACTORY SPEEDOMETER, not GPS). With a steady vehicle speed of 70MPH, have a passenger measure the GPS indicated speed while the factory speedometer reads 70MPH, and record this reading. Once the real GPS speed is recorded, the correction can be calculated.

Simply divide the factory speed reading (which would be 70MPH) by the GPS Speed Reading. For this example, we will assume a hypothetical GPS speed reading of 77MPH (insert your real value into the example)

The following would be for a real GPS speed of 77MPH while the factory Speedometer reads 70MPH:

Factory Speed Reading 70MPH

---------- ---------- = 0.909 (round to .91) Correction Factor

GPS Speed Reading 77MPH

Therefore, a .91 correction factor indicates the factory speedometer is currently reading 9% slow. (A 1.00 correction factor would indicate that both speed readings match, and no correction would be required).

1.00 - 0.91 = 0.09 (9% Correction Factor Percentage)

To correct this, the user would input a value of "+9%" into the Tire Size Adjustment feature on your Phalanx/Phalanx II Console before installing a tune file.

If the value of your Correction Factor is above 1.00 after the first math calculation, or Correction Factor Percentage is negative (-) after performing the second math calculation, simply input a negative value into the Tire Size Adjustment feature before installing a

tune file. (A correction factor above 1.00, or a negative correction factor percentage should only occur if the tire you are installing is smaller in diameter than your stock tire).

Please note: Any time a larger-than-stock tire is installed on your vehicle, the correction factor should always be a POSITIVE value. The GPS Speed reading will also always be HIGHER than your uncorrected vehicle speedometer reading with a larger tire installed. If you have a larger tire installed and you have calculated your Correction Factor Percentage as a negative value, please double-check your math.

(IMPORTANT NOTE: THE GPS CORRECTION METHOD ***CANNOT*** BE PERFORMED ON A RACING VEHICLE, A VEHICLE WITH A DPF-OFF RACING TUNE FILE INSTALLED, OR A VEHICLE WITH ANY FACTORY EMISSIONS EQUIPMENT REMOVED. USE OF A VEHICLE IN THIS CONDITION ON A PUBLIC HIGHWAY OR ANY OPERATION OTHER THAN CLOSED-CIRCUIT RACING IS A VIOLATION OF FEDERAL LAW. PLEASE SEE THE USER EMISSIONS DISCLAIMER SIGNED WHEN YOU PURCHASED OUR DEVICE. PLEASE USE THE SECOND METHOD DESCRIBED BELOW TO PERFORM SPEEDOMETER CORRECTION ON RACING VEHICLES).

Method 2- Tire Revolutions per Mile

A tire size speed correction can be performed by a comparison of the "revolutions per mile" of each tire size (NEW TIRE SIZE vs. OLD TIRE SIZE). These values are available from tire manufacturers (and are usually available on manufacturer's websites). You will need the "Revs Per Mile" figure for each different tire size.

For example, the "Revolutions per Mile" for a factory-equipped 275/65/R20 tire is approximately 620 revs/mile. Also, for example, we will assume a 37x12.50xR20 "Nitto Trail Grappler" is being installed on the vehicle, at 566 revs/mile. Simply divide the "NEW TIRE " Revs/Mile by the "FACTORY TIRE" Revs/Mile. Your tire size correction factor would be calculated as follows:

NEW TIRE REVS/MILE 566 REVS/MILE

---------- ---------- = .912 (round to .91) Correction Factor

FACTORY TIRE REVS/MILE 620 REVS/MILE

Therefore, a .91 correction factor indicates the factory speedometer is currently reading 9% slow. (A 1.00 correction factor would indicate that both speed readings match, and no correction would be required).

1.00 - 0.91 = 0.09 (9% Correction Factor Percentage)

To correct this, the user would input a value of "+9%" into the Tire Size Adjustment feature on your Phalanx/Phalanx II Console before installing a tune file.

If the value of your Correction Factor is above 1.00 after the first math calculation, or Correction Factor Percentage is negative (-) after performing the second math calculation, simply input a negative value into the Tire Size Adjustment feature before installing a tune file. (A correction factor above 1.00, or a negative correction factor percentage should only occur if the tire you are installing is smaller in diameter than your stock tire).

Please Note: Any time a larger-than-stock tire is installed on your vehicle, the correction factor should always be a POSITIVE value. The Revs/Mile of the NEW TIRE should always be LOWER than the FACTORY TIRE Revs/Mile with a larger tire installed. If you have a larger tire installed and you have calculated your Correction Factor Percentage as a negative value, please double-check your math.

EGR System Selection

The EGR (Exhaust Gas Recirculation) System Selection parameter is used to adjust your chosen vehicle Tune File for removal of the factory EGR System for racing applications. The following options are available:

1.) **EGR ON** (choose this option if your EGR system is not modified; this is the default selection).

2.) **EGR OFF** (choose this option if your vehicle is equipped with an EGR System Delete Kit, EGR Blocker plates, or has any other modifications to the EGR System)

Choosing option number 2 will take care of any Check Engine Light, DTC's (diagnostic trouble code) and loss of power issues associated with EGR System removal.

Please Note: This option is NOT available and will not be displayed for DPF ON, emissions-compliant Tune files intended for use on Public Highways.

Low Pressure Fuel System Selection

The Low Pressure Fuel System Selection parameter is used to adjust your chosen vehicle Tune File for the installation of an aftermarket low pressure fuel delivery system, such as AirDog, FASS, or other available systems. The following options are available:

1.) **Stock Fuel System** (choose this option if your low pressure fuel system is unaltered).

2.) **Aftermarket Fuel System** (choose this option if your low pressure fuel system has been altered, or replaced with an aftermarket system.

Choosing option number 2 will take care of any Check Engine Light, DTCs (diagnostic trouble code) and no-crank issues sometimes associated with modification of the low pressure fuel system.

Please Note: This selection is for the Low Pressure Fuel System ONLY. This does not provide correction for a modified high pressure fuel system, such as an upgraded high pressure fuel pump, or dual high pressure fuel pumps. Currently, you will need custom tuning for high pressure system changes.

Traction Control System Selection

The Traction Control System Selection parameter allows the user to enable or disable the EOTC (Engine-Only Traction Control) system equipped on some vehicles. If your vehicle is equipped with factory traction control (if there is a dash button to the right of the steering wheel labeled "TCS", the vehicle is equipped). If the vehicle is not equipped, this function will do nothing if changed. The following options are available:

1.) **Traction Control Enabled** (Default)

2.) **Traction Control Disabled**

If the vehicle is equipped with traction control, and the "Enabled" option is chosen, the system will operate as stock. The system can still be turned on or off with the dash button. Choosing "Disabled" will permanently disable the traction control system, and the TCS button light will stay illuminated at all times, indicating the system is off. The system will stay disabled until another tune is selected and loaded into your vehicle, with the "Enabled" selection chosen.

P0088 DTC Selection

The P0088 DTC Selection can be used to disable Diagnostic Trouble Code P0088 for High Fuel Rail Pressure on 6.4L Powerstroke applications. This code is normally indicative of a physical problem with the High Pressure Fuel Pump, Fuel Volume Control Valve (VCV) or Fuel Pressure Control Valve (PCV), however under rare circumstances (typically high load and cold fuel temperature) can erroneously trigger, causing the DTC to show when using the "Check Engine" function and occasionally cause an illuminated Check Engine Light. The following options are available:

1.) **Enabled (Stock)** *Default, Recommended

2.) **Disabled**

We recommend only using this function if your vehicle repeatedly throws the P0088 DTC with no other problematic symptoms.

WARNING Be advised, with the diagnostic trouble code disabled, the P0088 DTC will not be triggered, even in the event of physical problems.

Converter Lockup Speed Selection

The Converter Lockup Speed Selection parameter allows the user to adjust the speed at which the transmission's torque converter locks and unlocks. This affects the feeling of how the transmission performs in general. The following options for 40HP through 210HP tune files are available:

1.) **Standard Converter Lockup Late** (Default)

2.) **Early Converter Lockup**

The default selection for all tune files from 40HP through 210HP is "Standard". This is recommended for most stock trucks. The "early" selection is recommended for late 2009MY and 2010MY single-rear wheel vehicles equipped with 3.55 rear axle ratios. These are recommendations, however, and can be chosen to the liking of the user.

The following options are available for 210HP Tow Performance, and 250HP-310HP tune files:

1.) **Standard Convertor Lock Early** (Default)

2.) **Delayed Converter lockup Late**

The default selection for all tune files from 210HP Tow Performance through 310HP is "Early". For performance purposes, this is the optimal selection. The "Delayed" selection is most useful with trucks equipped with 37" or larger tires. On these vehicles, users may experience too early of a converter lockup, causing engine "lugging" and dropping below optimal Engine RPM after gear shifting. These are recommendations, however, and can be chosen to the liking of the user.

Notes for Users:

1.) When a tune file installed in a vehicle with user-adjusted options selected, those chosen changed options will remain in effect for any future tune file changes, until they are manually changed back to default settings by the user.

*2.) Feel free to make any changes with the standard user-adjustable options that you like. While making erroneous changes may cause adverse performance with the truck, they can be corrected by simply adjusting and re-installing the tune file. Standard options are **reasonably** limited in a manner to provide functionality without risking damage to the vehicle.*

*3.) Enhanced user-adjustable options (available at a later date) **do contain** user options that can cause damage to the vehicle if adjusted improperly. Spartan advises that changes not be made unless the user is well-versed in their operation. Spartan is not responsible for vehicle damage made by erroneous or improper adjustments made by the user.*